COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

Investigation by the Department of Telecommunications and Energy on its own Motion into the Appropriate Pricing, based upon Total Element Long-Run Incremental Costs, for Unbundled Network Elements and Combinations of Unbundled Network Elements, and the Appropriate Avoided Cost Discount for Verizon New England, Inc. d/b/a Verizon Massachusetts' Resale Services in the Commonwealth of Massachusetts	D.T.E. 01-20

AT&T'S SECOND SET OF INFORMATION

REQUESTS TO VERIZON

AT&T Communications of New England, Inc. hereby submits to Verizon the following information requests. Please provide responses to these requests as they are completed.

Instructions

1. Each request should be answered on a separate page preceded by the request and by the name of the person responsible for the answer.

2. Please provide answers as they are completed.

3. These requests shall be deemed continuing so as to require supplemental responses if Verizon subsequently receives or becomes aware of additional information responsive to these requests.

4. If an answer refers to Verizon's response to another information request in this proceeding, please provide that response with the answer.

5. If Verizon cannot answer a request in full, answer to the extent possible and state why Verizon cannot answer the request in full.

6. If Verizon refuses to respond to any request by reason of a claim of privilege, state the privilege claimed and the facts relied upon to support the claim of privilege.

7. Unless otherwise stated, these requests concern Verizon's Rhode Island intrastate operations.

INFORMATION REQUESTS

1. a) Provide a copy of Verizon's most complete and accurate database containing customer location information, and all documentation necessary to interpret and utilize that data;

b) To the extent there are customers locations not appearing in the database, identify the absence of such information in whatever manner is available to Verizon - for instance, by indicating what fraction of the lines served by a given wire center have associated geocoded information, or by identifying towns and other geographic identities for which no (or only limited) geocoded information is available.

2. For each wire center building location that contains one or more end office switches, provide

a) the geographic coordinates (latitude-longitude or V-H coordinates) of that wire center; and

b) the CLLI codes of each switch in each wire center.

3. a) For each wire center identified in the response to Data Request No. 2, provide the wire center boundaries of that wire center, in electronic form if available (e.g., identifying mapping coordinates for the wire center boundaries), or in paper form otherwise;

b) To the extent there is information available linking a given customer location to the wire center that serves that location, provide such information for each customer location identified in your response to Data Request No. 1.

4. For each wire center identified in the response to Data Request No. 2, provide the number of lines of each type - primary residence lines, multi-line residence lines, single-line business lines, multi-line business lines, public phone lines, special access lines (broken out by DS-0, DS-1, and DS-3 and above), and dedicated circuits (broken out by DS-0, DS-1, and DS-3 and above) - served by that wire center. Break down the number of lines by individual end office switch, if that level of detail is available.

5. For each wire center identified in the response to Data Request No. 2, provide the average loop length and the total feeder and distribution route miles for that wire center, broken down by individual end office switch if that information is available. Provide all data, analyses, workpapers, and notes used to make this determination.

6. a) For each wire center identified in the response to Data Request No. 2, indicate whether or not there is also a tandem switch located in the same wire center building;

b) For each tandem identified in part (a), provide the CLLI for that tandem switch;

c) For each tandem identified in part (a), indicate whether the end office and tandem switching functions are provided by a single switch, or are provided by separate switches;

d) For any tandems located in buildings other than wire centers identified in the response to Data Request No. 2, identify the tandem by CLLI code and provide its geographic coordinates.

7. a) For each tandem identified in the response to Data Request No. 6, whether located in an end office wire center location or other building, provide the busy-hour traffic carried by that tandem switch, and the number of trunks terminated on the switch;

b) Provide Verizon's best available estimate of the fraction of Verizon's local and intra-LATA toll calls (show separately for the two types of traffic) both originating and terminating in a Verizon end office switch that are routed via a tandem switch as opposed to routing via direct trunks between Verizon end offices;

c) Provide Verizon's best available estimate of the fraction of Verizon's local and intra-LATA toll calls (show separately for the two types of traffic) originating in a Verizon end office switch and terminating on a CLEC switch, or vice-versa, that are routed via a Verizon tandem switch as opposed to routing via dedicated trunks between the Verizon end office and the CLEC switch;

d) Provide Verizon's best available estimate of the fraction of Verizon's inter-LATA calls that are routed via a tandem switch as opposed to direct routing via dedicated trunks from end office switches directly to an IXC POP.

Provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information.

8. Provide the fully discounted price that Verizon, or its purchasing subsidiary or affiliate, has paid to manufacturers for its ten most recent purchases of Network Interface Devices (NIDs), showing such prices separately for NIDs used at residential and business premises. To the extent that different size NIDs are used in different situations, provide the price of all NID sizes commonly installed by Verizon Bell. To the extent there is a separate price for the NID case and for the actual line protector installed in the case, break the total price down into these components. Provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate this information.

9. a) Provide the costs Verizon incurs, or that it pays in contracts to other parties, to install, test, and place NIDs into service;

b) Provide the yearly maintenance and other operations costs associated with NIDs, stated on a per-NID basis. For both parts (a) and (b), to the extent such costs are dependent on the size of the NID, whether it is installed at residential or business premises, or on the type of drop cable used (aerial vs. buried), provide sufficient documentation to identify such dependencies.

For both parts of this question, provide all available data and documentation - statistical data, planning guidelines, loading factors, studies, analyses, workpapers, and so on - that substantiate this information.

10. Provide the average length, size (number of pairs), percentage structure (aerial versus buried), and installed cost per foot of drop cable deployed by Verizon. To the extent any or all of these quantities depend on the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the answers by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences. Provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information.

11. Provide the fully discounted price that Verizon, or its purchasing subsidiary or affiliate, has paid to manufacturers for its ten most recent purchases of the line terminals where drop cables are spliced to distribution cables. Indicate the number of lines served by such terminals, and provide any other information necessary to determine the cost per line of such terminals. To the extent there are a range of sizes of such devices that are used in different situations, provide the total and per-line cost of each size commonly deployed by Verizon. Also, to the extent the per-line price depends on such factors as whether it is pedestal- or pole-mounted, serves business and residential customers, is used indoors or outdoors, and the like, provide sufficient information to determine such dependencies. Provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate this information.

12. Provide the per-line costs associated with the engineering and installation (including splicing) of the terminals that join drop cables to distribution cables. To the extent the answer is dependent on factors such as those identified in Data Request No. 11, provide sufficient information to determine these dependencies. Provide all available data and documentation - statistical data, planning guidelines, loading factors, studies, analyses, workpapers, and so on - that substantiate this information.

13. Provide the fully discounted price that Verizon, or its purchasing subsidiary or affiliate, has paid to manufacturers for its ten most recent purchases of copper cables, displaying this information for each cable size (number of wire pairs) purchased. To the extent these recent contracts do not cover the full range of copper cable sizes Verizon commonly deploys in its distribution, feeder, and interoffice network, provide in addition the corresponding information from the most recent contracts that cover the full range of cable sizes. The information supplied should be sufficient to determine the per-foot price of each cable size. Provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate this information.

14. Provide the relationship between the installed cost of copper cable and the discounted price of cable provided in response to Data Request No. 13. To the extent necessary, break this information down by the size of the cable and the type of structure (aerial, buried, underground) that supports the cable. The answers may be supplied as a ratio, or

ratios, or in other suitable form. Provide all available data and documentation - statistical data, planning guidelines, loading factors, studies, analyses, workpapers, and so on - that substantiate this information.

15. Provide the fully discounted price that Verizon, or its purchasing subsidiary or affiliate, has paid to manufacturers for its ten most recent purchases of fiber optics cables, displaying this information for each cable size (number of fiber strands) purchased. To the extent these recent contracts do not cover the full range of fiber cable sizes Verizon commonly deploys in its feeder, and interoffice network, provide in addition the corresponding information from the most recent contracts that cover the full range of cable sizes. The information supplied should be sufficient to determine the per-foot price of each cable size. Provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate this information.

16. Provide the relationship between the installed cost of fiber optics cable and the discounted price of the cable supplied in response to Data Request No. 15. To the extent necessary, break this information down by the size of the cable and the type of structure (aerial, buried, underground) that supports the cable. The answers may be supplied as a ratio, or ratios, or in other suitable form. Provide all available data and documentation - statistical data, planning guidelines, loading factors, studies, analyses, workpapers, and so on -- that substantiate this information.

17. Provide the fully discounted price that Verizon, or its purchasing subsidiary or affiliate, has paid to manufacturers for its ten most recent purchases of poles used to support aerial distribution, feeder, and interoffice cables. To the extent these recent contracts do not cover all the pole sizes that Verizon commonly deploys in its distribution, feeder, and interoffice network, provide in addition the corresponding information from the most recent contracts that cover the full range of cable sizes. Identify, and separately show the price of, all hardware associated with the purchase of poles. Provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate this information.

18. Provide the relationship between the installed cost of poles and the discounted price of the poles. To the extent this relationship depends on the type of poles or the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the answers by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences. The answers may be supplied as a ratio or ratios, or in other suitable form. Provide all available data and documentation - statistical data, planning guidelines, loading factors, studies, analyses, workpapers, and so on - that substantiate this information.

19. a) Provide the fully discounted price that Verizon, or its purchasing subsidiary or affiliate, has paid to manufacturers for its ten most recent purchases of manholes used in connection with underground copper distribution, feeder, and interoffice cables. To the extent the manhole price depends on the size of the manhole, identify each size manhole

Verizon commonly purchases, and provide sufficient information to determine how the price depends on the manhole size.

b) Provide the fully discounted price that Verizon, or its purchasing subsidiary or affiliate, has paid to manufacturers for its ten most recent purchases of manholes, hand holes, and/or pull boxes used in connection with underground fiber optics feeder and interoffice cables. To the extent the price depends on the type and size of the manhole, identify each type and size of such structure Verizon commonly purchases, and provide sufficient information to determine how the price depends on these differences.

For both parts of this question, provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate this information.

20. Provide the relationship between the installed cost of a) manholes for copper feeder cable, and b) manholes or other enclosures for fiber feeder cable and interoffice cable to the discounted price of these various enclosures. To the extent these relationships depend on the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the answers by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences. The answers may be supplied as a ratio or ratios, or in other suitable form. Provide all available data and documentation - statistical data, planning guidelines, loading factors, studies, analyses, workpapers, and so on - that substantiate this information.

21. a) Provide Verizon's best estimation of the percentage of distribution plant that is, respectively, aerial, buried, and underground (in conduit). To the extent these percentages depend on the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the percentages by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences;

b) Provide Verizon's best estimation of the percentage of copper feeder plant that is, respectively, aerial, buried, and underground (in conduit). To the extent these percentages depend on the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the percentages by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences.

c) Provide Verizon's best estimation of the percentage of fiber feeder plant that is, respectively, aerial, buried, and underground (in conduit). To the extent these percentages depend on the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the percentages by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences.

d) Provide Verizon's best estimation of the percentage of interoffice plant that is, respectively, aerial, buried, and underground (in conduit). To the extent these percentages depend on the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the percentages by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences.

For each of parts (a) through (d), provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information.

e) To the extent Verizon believes the forward-looking trend in any of the percentages of aerial, buried, and underground plant presented in parts (a) through (d) are towards a different mix of plant types, clearly identify such trends, present Verizon's rationale for why they are happening, and provide Verizon's best estimation of the new percentages that will result from these trends in the long run.

22. a) Provide Verizon's best estimation of the percentage of customer lines that are currently served by, respectively, copper and fiber feeder. To the extent these percentages depend on the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the percentages by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences. Also, to the extent these percentages depend on the type of line - residence, business, public, special access, switched versus dedicated circuit, etc. - separately specify the percentage of copper versus fiber feeder for each such type of line. Provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information.

b) Concerning the answers provided in Part (a) of this Data Request, is it Verizon's contention that the current percentages reflect the most economic cost of providing feeder plant? If so, provide all available documentation - planning guidelines, studies, analyses, work papers, and so on - that establish why Verizon believes the current mix to be the most economic one. If not, indicate what Verizon believes to be the likely mix of copper and fiber feeder that will represent the most economic mix of copper and fiber feeder, clearly indicate all factors and considerations that will cause the current mix to change, and provide all available documentation - planning guidelines, studies, analyses, work papers, and so on - associated with Verizon's determination of the most economic mix of copper and fiber feeder.

23. Provide Verizon's best estimation of the average spacing between poles used to support aerial distribution, feeder, and interoffice cable, respectively. To the extent the spacing depends on the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the spacing by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences. Provide all available data and documentation - statistical

data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information.

24. a) Provide Verizon's best estimation of the percentage of distribution cable fill, that is, the average percentage of available pairs that are in use, and provide all planning guidelines, documentation, work papers, . . . used to arrive at this estimate. To the extent the fill depends on the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the fill by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences.

b) Provide Verizon's best estimation of the percentage of copper feeder cable fill, and provide all planning guidelines, documentation, work papers, . . . used to arrive at this estimate. To the extent the fill depends on the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the fill by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences.

For parts (a) and (b) of this data request, provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on -- that substantiate this information.

c) Concerning the answers provided in Parts (a) and (b) of this Data Request, is it Verizon's contention that the current distribution and copper feeder fills reflect, respectively, the most economic cost of providing distribution and feeder plant? If so, provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that establish why Verizon believes the current fills to be the most economic ones. If not, indicate what Verizon believes to be the likely fills for distribution cable and copper feeder cable that will represent the most economic cost. Clearly indicate all factors and considerations that will cause the current fills to change, and provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - associated with Verizon's determination of the most economic fills for distribution cable and copper feeder cables.

25. Provide the fully discounted price that Verizon, or its purchasing subsidiary or affiliate, has paid to manufacturers for its ten most recent purchases of serving area interfaces (SAIs). To the extent the SAI price depends on the size of the SAI, in terms of the copper pairs terminated on the interface, identify each size SAI Verizon commonly purchases, and provide sufficient information to determine how the price depends on the SAI size. Also, to the extent the SAI price depends on whether the SAI is used in indoor or outdoor environment, provide sufficient information to determine how the price depends on these two uses. Provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate this information.

26. What the relationship between the installed cost of SAIs and the discounted price of the SAIs. To the extent this relationship depends on the population demographics

involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - or on whether the SAI is installed indoors or outdoors, separately specify the answers by such demographic environments, by wire center, by indoor versus outdoor uses, or by other differentiators suitable for clearly portraying such differences. Provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information.

27. a) Please provide the fully discounted price, including a breakdown of charges for equipment, engineering and installation costs that Verizon, or its purchasing subsidiary or affiliate, has paid to manufacturers for its ten most recent purchases of Digital Loop Carrier (DLC) systems.

b) Provide all available breakdown of the equipment price into its separate components. At a minimum, identify the common equipment and line card components of the equipment cost. In particular, identify the manufacturer's engineering and installation costs separately from the price of the DLC itself, to the extent such information is available.

To the extent there is a range of DLC sizes, specified in terms of the maximum number of lines that can be served by the DLC, or types that Verizon commonly purchases, provide the information requested in parts (a) and (b) for the full range of sizes and types of DLC Verizon purchases. Provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate the information provided in response to this data request.

28. To the extent Verizon incurs additional site preparation, engineering, and/or installation costs associated with DLC systems above and beyond what it pays manufacturers, provide the relationship between the installed cost of DLCs and the discounted price of the SAIs. To the extent such additional costs depend on the size or type of DLC installed, provide such information for the full range of DLC sizes and types Verizon commonly deploys in its network. Also, to the extent this relationship depends on the population demographics involved - that is, whether a DLC is being installed in rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the answer by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying such differences. The answers may be supplied as a ratio or ratios, or in other suitable form. Provide all available data and documentation - statistical data, planning guidelines, loading factors, studies, analyses, workpapers, and so on - that substantiate this information.

29. Provide Verizon's best estimate of the degree to which the feeder and interoffice parts of its network share outside plant support structures. State the answer in terms of route miles shared, saved investment in support structures, or other reasonable measures that Verizon can define and quantify clearly. To the extent the amount of sharing depends on the population demographics involved - that is, rural, semi-rural, suburban, urban, downtown business district, etc. - separately specify the sharing by such demographic environments, by wire center, or by other differentiators suitable for clearly portraying

such differences. Provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information.

30. Please provide the total manufacturer's discounted price Verizon has paid to manufacturers for its ten most recent purchases of new Class 5 end office local switches, breaking down the total price into charges for equipment, engineering and installation costs. Specify the total purchase price and the price on a per line basis. If the per-line cost differs by the size of the switch, describe that relationship -- that is, the price per line as a function of the number of lines in a switch. Show costs separately for host, remote, and stand-alone switches, to the extent the requested information differs by type of switch. For each switch purchase listed, please also provide:

a) total switch capacity as installed in terms of total lines, total trunks and total call attempts per busy hour;

b) any one-time right to use fees that were paid at the time the switch was purchased and a description of the functionality provided for each fee;

c) any annual right to use fees that have been paid in association with each switch and a description of the functionality provided for each such fee;

d) the portion of the total switch cost that Verizon considers traffic-sensitive and non-traffic-sensitive. (In answering this question, please separately identify how equipment and engineering/installation costs are treated. Please also provide the specific basis and any workpapers or other documentation that supports Verizon's answer); and

e) a detailed description of the components of the switch that Verizon considers non-traffic-sensitive.

With respect to the answers to each part of this data request, provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate this information.

31. For each switch identified in response to the preceding request, please identify any additional costs that Verizon adds to the purchase price of switches to develop a total per-line cost of switching, show how each additional element is calculated, and provide the total result. Such additional costs might include, for instance, Verizon's engineering costs, the cost of mainframes, cost of emergency power, wire center land and building costs, and so on. If Verizon uses a multiplier of the cost of the switch to arrive at any of all such associated costs, please provide each such multiplier. If such costs are determined on a basis other than a multiplier of switch cost, please describe exactly how such costs are calculated. Provide all available data and documentation - statistical data, planning guidelines, loading factors, studies, analyses, workpapers, and so on - that substantiate this information.

32. Does Verizon currently plan to make any additional end office switch purchases within the next two years? If "yes," please provide the EF&I price Verizon, or its purchasing subsidiary or affiliate, plans to pay. Please also provide any correspondence with switch manufactures regarding its intended purchases. For each planned switch purchase please also provide Verizon's estimated cost on a per line basis. If the per-line cost differs by the size and/or type of the switch, describe that relationship -- that is, the price per line as a function of the number of lines in a switch, and/or as a function of whether the switch is a host, remote, or stand-alone switch. Identify the engineering and installation costs separately from the price of the switch itself. For each planned switch purchase listed, please also provide the total planned switch capacity in terms of total lines, total trunks and total call attempts per busy hour. Provide all available data and documentation -- invoices, purchase orders, correspondence with manufacturers, work papers, and so on -- that substantiate this information.

33. Please provide Verizon's best available estimation of its percent of completed calls (as opposed to calls dialed but not completed) for the year 1999, and for 2000 if the information is available. To the extent possible, please provide the requested data both at a total level and disaggregated into local, intraLATA and interLATA categories. Please also supply copies of all data, documentation, workpapers, studies, and analyses that Verizon used to develop its response to this request.

34. To the extent that existing ARMIS data is either incomplete or inaccurate with respect to the following information, please provide Verizon's best available estimation of the total minutes of use per access line on its network for the year 1999, and for 2000 if the information is available. To the extent possible, please provide the requested data both at a total level and disaggregated into local, intraLATA and interLATA categories and for business and residence lines. Please also supply copies of all data, documentation, workpapers, studies, and analyses that Verizon used to develop its response to this request.

35. To the extent that existing ARMIS data is either incomplete or inaccurate with respect to the following information, please provide Pacific's best available estimation of the total minutes of use on its network for the year 1999, and for 2000 if the information is available. To the extent possible, please provide the requested data both at a total level and disaggregated into local, intraLATA and interLATA and for originating and terminating usage. Please also supply copies of all data, documentation, workpapers, studies, and analyses that Verizon used to develop its response to this request.

36. Please provide Verizon's best available estimation of its average end office switch processor utilization by end office switch, and the statewide average end office switch processor utilization, for 1999, and for 2000 if the information is available. Please also supply copies of all data, documentation, workpapers, studies, and analyses that Verizon used to develop its response to this request.

37. Please provide Verizon's best available estimation of its average tandem switch processor utilization by individual tandem switch, and its statewide average tandem

processor utilization, for the year 1999, and for 2000 if the information is available. Please also supply copies of all data, documentation, workpapers, studies, and analyses that Verizon used to develop its response to this request.

38. Please provide Verizon's best available estimation of its percent utilization of equipped line capacity by end office switch, and the statewide average percent utilization of equipped line capacity, for the year 1999, and for 2000 if the information is available. Please also supply copies of all data, documentation, workpapers, studies, and analyses that Verizon used to develop its response to this request.

39. Please provide Verizon's best available estimation of its percent utilization of ultimate line capacity by end office switch, and the statewide average percent utilization of ultimate line capacity, for the year 1999, and for 2000 if the information is available. Please also supply copies of all data, documentation, workpapers, studies, and analyses that Verizon used to develop its response to this request.

40. a) Does Verizon agree that the appropriate forward-looking architecture for its interoffice network involves in every case the use of fiber optics rings connecting different end office and tandem offices to each other? To the extent Verizon believes there is an alternative architecture that should apply in some cases, provide a complete description of the alternative architecture and specify in which cases it would be more appropriate to use that architecture rather than using fiber optics rings.

b) To what extent has Verizon implemented its forward-looking interoffice network architecture? The answer can be specified in terms of the percentage of interoffice trunks that are implemented on the forward-looking architecture compared to the total population of interoffice trunks, or by other measure Verizon defines.

c) To the extent Verizon is making use of interoffice fiber rings, are they implemented as Bi-directional Line Switched Rings (BLSR) on two fibers, BLSR on four fibers, or another configuration? If Verizon makes use of a mix of configurations, please define the criteria used to determine which configuration is appropriate to use in a given circumstance.

With respect to the answers to parts (a) through (c), provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information.

41. Please provide a copy of all planning documents, engineering guidelines, manufacturers' specifications and the like that Verizon uses in planning and engineering its interoffice fiber ring network.

42. Please provide a complete and detailed description of the calculation of interoffice ring investments in Verizon's cost study, including in particular the assumed configuration of the equipment and facilities utilized in the rings. The description should be detailed enough to provide answers to all of the questions presented below. The

questions should be answered with specific reference to the Verizon cost study, not to any internal guidelines and practices Verizon may employ in engineering its rings. To the extent answers to these questions are clearly spelled out in the documentation accompanying Verizon's cost study, Verizon may reference the sections of its study where the answers are found. If there are several standard configurations the cost study assumes, the questions should be answered for each of these standard configurations. Provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information.

a) What cable size (number of fiber strands) or sizes does the Verizon study assume? To the extent the study assumes more than one cable size, how does it select among the assumed cable sizes for different rings?

b) What transmission terminal configuration exists in each wire center on a ring? Does the transmission terminal capacity differ from one wire center to another? If so, describe how the study determines the transmission terminal capacity to be provided in each wire center?

c) Is each wire center provisioned with sufficient transmission terminal capacity to terminate the total number of circuits on the entire ring, taking an appropriate fill factor into account? Or, alternatively, is the capacity of the equipment in each wire center sufficient only to terminate a portion of the total circuits on the ring? If the latter, what are the criteria used to calculate the transmission terminal capacity for a given wire center?

d) Other than the transmission terminal equipment in each wire center that supports the circuit capacity requirements of that particular wire center, is there any other transmission equipment provided on the ring? If so, describe the nature and use of such additional equipment, and identify the criteria by which the nature and capacity of the additional equipment is determined.

e) What is the maximum number of nodes on a given ring?

f) What transmission protocol and speed is assumed on the rings? For instance, does the study assume an OC-12 signal? OC-48? Other rate? If there is a mixture of more than one protocol and speed, what are the criteria by which the Verizon study chooses between the different options?

g) How many rings are defined in the Verizon cost study? To the extent the information is available, identify each ring in terms of the end office and tandem wire centers that are on that ring, and show the number of interconnections between rings and where they occur.

h) Does Verizon use, or plan to use, wave division multiplexing (WDM) on its interoffice fiber rings? If so, please specify the type of WDM that is utilized, or will be utilized -- e.g., the numbers, protocols, and speeds of the signals on a given fiber strand. Provide a

copy of the manufacturers' specification for the WDM equipment that is or will be utilized. Provide all cost and capacity information on such WDM systems that is used in the Verizon cost study.

43. Please state the assumptions used by the Verizon cost study for each of the following. To the extent the assumptions depend on a particular ring configuration, demographic area, or the like, identify such dependencies and provide the requested information for each such differentiator.

a) The percentage mix of aerial, buried, and underground interoffice cable

b) The cost per foot for placing interoffice cable on or in each kind of structure.

c) the spacing of repeaters on interoffice transport facilities

d) the spacing of manholes, pull boxes, or other such structures assumed by the study.

e) The average busy-hour CCS per trunk.

Provide all available data and documentation - statistical data, planning guidelines, studies, analyses, workpapers, and so on - that substantiate this information.

44. Please provide the total discounted price Verizon has paid to manufacturers for its ten most recent purchases of interoffice transmission equipment, breaking down the total price into charges for equipment, engineering and installation costs. To the extent these purchases don't cover the full range of transmission equipment Verizon uses in its interoffice network, provide in addition the corresponding information from the most recent contracts that cover the full range of cable sizes. Provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate this information.

45. Provide the relationship between the installed cost of transmission terminal equipment and the discounted price of the equipment provided in response to Data Request No. 44. Provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate this information.

46. Please provide the total investment in the interoffice network estimated by the Verizon cost study, breaking this investment down into investments in fiber cable, other media (if any), support structures, interoffice terminal equipment, and any other specifically-identifiable components of that network. Provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information, referring to an appropriate section of the Verizon cost study to the extent the answer is provided there.

47. Please provide the total fully discounted price Verizon has paid to manufacturers for its ten most recent purchases of SS7 Signaling Transfer Points (STPs) and Service

Control Points (SCPs), breaking down the total price into charges for equipment, engineering and installation costs, and further breaking down the equipment investment into common equipment, trunk port costs, and any other categories specified in Verizon's purchase contracts. Indicate the transport and processing capacity of the equipment purchased, such as the number of messages per second the STPs can switch, the TCAP transactions per second the SCPs can process, and so on. Provide all available data and documentation -- invoices, purchase orders, work papers, and so on -- that substantiate this information.

48. What is Verizon's average annual wholesale customer service cost per UNE line it provides? Provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information. If appropriate, Verizon can reference the section of its cost study documentation that answers this question and/or provides the requested support for this quantity.

49. What degree of sharing of outside plant support structure with other utilities is assumed by the Verizon cost study to be appropriate in a model of forward-looking economic costs? To the extent appropriate, separately specify the answer for type of structure (aerial, buried, underground), outside plant component (distribution, feeder, interoffice), and/or demographic area (rural, suburban, urban, central business district). Provide all available data and documentation - statistical data, planning guidelines, studies, analyses, work papers, and so on - that substantiate this information. If appropriate, Verizon can reference the section(s) of its cost study documentation that answers this question and/or provides the requested support for this quantity.

50. What taxes and fees other than federal, state, and local income taxes, does Verizon pay? Please specify both the total annual amount and the way in which these taxes are calculated (e.g., a percentage of revenues, gross investment, etc.).

51. To the extent Verizon asserts that the HM 5.2a-MA produces investments for particular portions of the network that are too low, specifically identify the comparable investment estimated by the Verizon cost study. Please also supply copies of all data, documentation, workpapers, studies, and analyses that Verizon used to arrive at its conclusion, specifically identifying what steps Verizon has taken to ensure that it is making an apples-apples comparison between the HM 5.2a-MA results and its own cost studies.

Respectfully submitted,

AT&T COMMUNICATIONS OF NEW ENGLAND, INC.

By its attorneys,

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May 8, 2001

CERTIFICATE OF SERVICE

I hereby certify that I caused a true copy of the above document to be served upon the attorney of record for each other party by hand or mail on May 8, 2001.

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